REMARKS

Reconsideration of the application is requested in view of the foregoing amendments and the following remarks.

I. Claim Amendments

Claims 114-128 and 130-132 are requested to be cancelled without disclaimer or prejudice to further prosecution on the merits.

Claims 105-109, and 129 are amended to recite filter media that comprises "acrylic nanofibers." Cancelled claims 116, 119, 122, 125, 128, and 132 recited filter media that may include acrylic nanofibers. These cancelled claims were considered by the Examiner prior to issuing the present Office Action. Furthermore, support for these claim amendments is provided in the original claims and specification, for example, in original claims 3, 34, 49, and 61 and in the specification at paragraphs [0025], [0036], [0051], [0060], [0062], and [0064], which recite or disclose acrylic nanofibers.

Claim 108 is amended to omit recitation of the term "sufficiently different surface charge."

Because the foregoing amendments do not introduce new matter and place the application in condition for allowance or, at least in better condition for appeal, entry thereof is respectfully requested.

After entering the foregoing amendments, claims 105-109, 111-113, and 129 are pending in the application.

II. Claim Rejections – 35 U.S.C. § 112, second paragraph

Claim 108 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for reciting the term "sufficiently different surface charge." Claim 108 has been amended to omit recitation of this phrase and withdrawal of the rejection is requested.

III. Claim Rejections – 35 U.S.C. § 102 and § 103(a), Fischer

Claims 106-109, 117, 118, 120, 121, 123, 124, 126, 127 and 129-131 stand rejected under 35 U.S.C. § 102, as allegedly being anticipated by Fischer (U.S. Patent No. 5,800,706).

Applicants respectfully traverse the rejection in view of the claim amendments and for the following reasons.

Claims 106-109 and 129 currently are amended to recite "acrylic nanofibers." Fischer does not disclose nanofibers that are polymeric, let alone acrylic. As asserted in the Office Action dated June 29, 2007, "Fischer teaches that...[t]he scaffold particulates and nanofibers may be polymeric, inorganic, glass or metallic and may have the same or different composition form one another (col. 7, lines 40-44)." (*See* Office Action dated June 29, 2007, pages 2-3, at 3.a.). Applicants respectfully disagree with the Office Action's assertion that Fischer teaches polymeric nanofiber. At the section in Fischer cited by the Office Action (*i.e.*, column 7, lines 40-44), Fischer actually states:

> **The scaffold particulates may be, for example, polymeric, inorganic, glass or metallic. The particulate can have the same or different composition than the nanofiber. Preferably, the scaffold particulates are either glass fiber particles or carbon fibers.**

(*See* Fischer, col. 7, lines 40-44). Therefore, Fischer states that "the scaffold particulates may be, for example, polymeric," not that the nanofiber may be, for example, polymeric. At this section of the patent, Fischer also states that the particulate can have the same or different composition than the nanofiber. However, this is not the same as stating that "the nanofiber may be polymeric." Furthermore, Fischer does not disclose any actual examples of polymeric nanofiber. Therefore, Fischer does not disclose polymeric nanofiber, let alone acrylic nanofiber as recited in the claims.

Acrylic nanofibers have different, unexpected, and superior properties in comparison to other polymeric fibers or glass nanofibers. At paragraph [0051], the present specification discloses the preparation of a series of five media samples for air filter testing (*i.e.*, Media A, Media B, Media C, Media D, and Media E). All five samples included primary coarse fibers and optionally included secondary fibers as indicated in the following table:

Media	Secondary Fiber (type, amount, diameter)	MFP (μM)	Frazier Permeability (fpm at 0.5 in. H_2O)
A	None Included, N/A, N/A	19.5	40.3
B	Polyester Melt-Blown, 0.25 g, 1400-3300 nm	17.7	27.4
C	Polyester Melt-Blown, 1.00 g, 1400-3300 nm	12.3	15.2
D	Acrylic Nanofiber, 0.03 g, 100-500 nm	9.5	10.0
E	706 Glass, 0.25 g, 800 nm	10.5	12.4

As indicated, Media D included 0.03 g of acrylic nanofiber. Media A did not include secondary fibers. Media B included 0.25 g of polyester melt-blown fiber and Media C included 1.00 g of polyester melt-blown fiber. Accordingly, Media B and Media C included polyester melt-blown fiber in a mass amount that was approximately 8× or 30× greater than, respectively, the mass amount of acrylic nanofiber in Media D. Media E included 0.25 g of glass nanofiber (*i.e.*, a mass amount that was approximately 8× greater than the mass amount of acrylic nanofiber in Media D).

As provided in Table 1 (Fig. 8) and discussed in paragraph [0051], Media D had different, unexpected, and superior properties in comparison to these other four media samples. First, Media D had a "mean flow pore size" (MFP) of 9.5μM, which was lower than the MFP for any of these other four media samples, despite the acrylic nanofiber being present at a lower mass amount than the secondary fiber of any of these other four media samples. (*See* Table 1.) In addition, Media D had a lower "frazier permeability" than any of these other four media samples (*i.e.*, 10.0). (*See* Table 1.) In comparison, Media C (polyester melt-blown fiber 1.00 g) had an MFP of 12.3μM and a permeability of 15.2. Media E (glass nanofiber 0.25 g) had an MFP of 10.5μM and a permeability of 12.4.

Discussing air filter fractional efficiency for the prepare media, the specification states that "about 30 times more coarse polyester melt-blown fiber on a mass basis was required to achieve the efficiency obtained with the acrylic nanofiber; about 4 to 10 times more coarse fiber polyester melt-blown fiber on a mass basis was required to achieve the efficiency obtained with the glass nanofiber; less nanofiber is needed to obtain the efficiency increase than any of the coarser secondary fibers." (*See* paragraph [0051].) Therefore, acrylic nanofiber had a per mass efficiency that was ~30× greater than the per mass efficiency of polyester melt-blown fiber. Glass nanofiber had a per mass efficiency that was ~4-10× greater than the per mass efficiency of polyester melt-blown fiber. It follows that acrylic nanofiber had a per mass efficiency that was greater than the per mass efficiency of glass nanofiber (*i.e.*, ~30× versus ~4-10×, respectively, in comparison to the per mass efficiency of polyester melt-blown fiber). For these reasons, acrylic nanofibers have different, unexpected, and superior properties in comparison to other polymeric fibers or glass nanofibers.

Furthermore, not all polymeric nanofibers exhibit the same superior properties as acrylic nanofibers. At paragraph [0052] the specification discloses the preparation of a series of five additional media samples for fuel filter testing (*i.e.*, Media G, Media H, Media I, Media J, and Media K). All five samples included primary coarse fibers and optionally included secondary fibers as indicated in the following table:

Media	**Secondary Fiber (type, amount, diameter)**	**MFP (μM)**	**Frazier Permeability (fpm at 0.5 in. H_2O)**
G	706 Glass, 0.5 g, 800 nm	12.3	14.5
H	Fibrillated Kevlar, 0.5 g, 500-4000 nm	18.5	29.0
I	Fibrillated Kevlar, 1.00 g, 500-4000 nm	13.4	19.0
J	Polyester Melt-Blown, 0.8 g, 1400-3300 nm	16.1	23.0
K	Polyaramid, 0.06 g, 200-600 nm	16.7	25.0

In particular, Media K included 0.06 g of polyaramid nanofiber. Media K had an MFP which was higher than Media G, Media H, and Media J. (*See* Table 1.) Media K also had a permeability which was higher than Media G, Media H, and Media J. (*See* Table 1.)

Therefore, acrylic nanofibers have different, unexpected, and superior properties in comparison to other polymeric fibers or glass nanofibers. For these reasons, Applicants request that the rejections under 35 U.S.C. §§ 102 and 103(a) based on Fischer be reconsidered and withdrawn.

IV. Claim Rejections – 35 U.S.C. § 103(a), Fisher in View of Wilson

Claims 105 and 111-113 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer as applied to claim 106 above, and further in view of Wilson *et al.* (U.S. Patent No. 6,321,915). Applicants respectfully traverse the rejection in view of the claim amendments and for the following reasons.

Claim 105 currently is amended to recite "acrylic nanofibers." As discussed above, Fischer does not disclose polymeric nanofibers, let alone acrylic nanofibers. Likewise, Wilson does not disclose polymeric nanofibers, let alone acrylic nanofibers. In fact, Wilson emphasizes the use of inorganic fiber whiskers. (*See* Wilson, col. 6, lines 17-20 (stating that "[t]he filter media of the present invention includes a filter media structure, which comprises a blend of conventional inorganic fibers, such as carbon, ceramic, glass or silica fibers and inorganic fiber whiskers" (emphasis added)).)

As discussed above, acrylic nanofibers have different, unexpected, and superior properties in comparison to other polymeric fibers or glass nanofibers. For these reasons, Applicants request that the rejection under 35 U.S.C. § 103(a) over Fisher in view of Wilson be reconsidered and withdrawn.

V. Claim Rejections – 35 U.S.C. § 103(a), Fisher in View of Chung

Claims 119, 122, 125, 128, and 132 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer as applied to claims 106 and 129 above, and further in view in view of Chung *et al.* (U.S. publication no. 2003/0106294). Claim 116 stands rejected under 35 U.S.C. §

103(a) as being unpatentable over Fischer in view of Wilson as applied to claim 105 above, and further in view of Chung. Applicants respectfully traverse the rejection in view of the claim amendments and for the following reasons.

Although Chung discloses polymeric materials that may include "polymethylmethacrylate (and other acrylic resins)" at paragraph [0037], Chung does not specifically teach or suggest the use of acrylic nanofibers together with coarse fibers as recited in the present claims. As discussed above, acrylic nanofibers have different, unexpected, and superior properties in comparison to other polymeric fibers or glass nanofibers when used together with coarse fibers.

For these reasons and for the reasons discussed above, the amended claims are patentable over the cited references.

VI. Conclusion

It is believed that this application is in condition for allowance with claims 105-109, and 111-113, and 129 and such action is earnestly solicited.

Respectfully submitted,

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